



ITS  
MALAYSIA

INTELLIGENT TRANSPORT SYSTEM  
ASSOCIATION OF MALAYSIA



ITS SEMINAR AND EXHIBITION 2017

# DRIVING ITS TO A NEW NORMAL

**Connexion@Nexus**  
Bangsar South, Kuala Lumpur, Malaysia  
21 - 23 February 2017

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INTELLIGENT TRANSPORT SYSTEM  
ASSOCIATION OF MALAYSIA

## INTEGRATED COMMON PAYMENT SYSTEM (ICPS)



SURUHANJAYA  
PENGANGKUTAN AWAM DARAT  
LAND PUBLIC TRANSPORT  
COMMISSION



## Agenda



- 1 | Current Trends in AFC  
.....
- 2 | Overview of ICPS  
.....
- 3 | How Does ICPS Works?  
.....



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## Contactless Smart Card (CSC)



### Time-lapse illustration of Closed-loop based payment environment

**First** Contactless Smart Card Issued in Oulu, Finland



1992

1996



Jun: **Korea** - Upass, the World-First Commercial-used RF Card for Transportation.

Mar: **Malaysia** - First Smart Card in Malaysia.  
Brand: Touch 'n Go



1997

2002



Apr: **Singapore** - First Smart Card in Singapore (EZ-Link)

Jul: **UK** - Cubic introduced Oyster Card for Greater London



2003

2004



Apr: **Korea** - Korea Smart Card Corporation (KSCC) introduced T-Money for Korea Metro Area

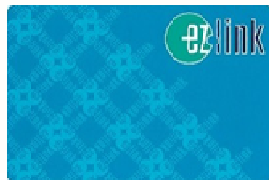


## Contactless Smart Card (CSC)



### Key Features of CSC

- The de-facto standard for transit payments systems since 90s
- Numerous of advantages over older paper-based and magnetic ticketing systems.
- Smart cards are more flexible, secure, easy to use and have reduced operating costs compared with paper tickets



### However it also has limitations

#### Proprietary payments system

**Closed-loop** payment system. Allows for commuters to pay a fare and validates their access to travel valid only within the operators' scheme/operation

#### Lack of Flexibility

Commuters are forced to use a smart card that is specific and only valid on that transit system.

#### Data is predominately stored on the cards.

Increases the complexity of functions required on both validators/card reader and fare media (token/smart card)

#### Commuters' Fund are locked up, dormant and required Top-up

The funds are locked up and dormant until the next usage. It is also require user to top-up and remember their smartcard for travel

#### High Investment to Operators

Require a significant up-front infrastructure investment and can have relatively expensive ongoing operational costs e.g. maintaining proprietary reload infrastructures, as well as issuing and managing dedicated cards or tokens for the scheme



# Open-loop & Account Based Payment System



## Next Generation of Transit Fare Payment System

### Key Features

- Payment media issued by other organisations e.g. BankCards, Mobile wallets etc
- Usage that across industries i.e. transportation, tolling, retails, entertainments, e-commerce
- A fare media act as a credential to identify the commuter and associated with individual account for payments.
- All fare payments processed at the back end from the commuter account e.g. bank account for debit card, Touch 'n Go Zing Card, Google pay/Apple Pay for mobile payment, credit card

### Implementations



#### Seoul

- ✓ Started in 2004
- ✓ Rail, Buses & Taxi
- ✓ Annual Ridership 2.5 bil



#### London

- ✓ Started in 2003
- ✓ Subway & Buses
- ✓ Annual Ridership 1.3 bil



#### Salt Lake City

- ✓ Started in 2013
- ✓ TRAX & Buses
- ✓ Annual Ridership 45 mil



#### Bangkok

- ✓ Started in 2012
- ✓ MRT & Buses
- ✓ Daily Ridership 600 k

MIAMI

New York

Seattle

Hong Kong

### The Key Benefits

#### Open Payment

schemes off the convenience using single bank card/mobile device as payment method

#### Interoperability

Across transit operator & mode, P&R, ride-sharing, other industries e.g. retails, entertainment etc

#### Convenient

Back-end trans via online e.g. top-up, queries, refund etc

#### Streamlined Billing

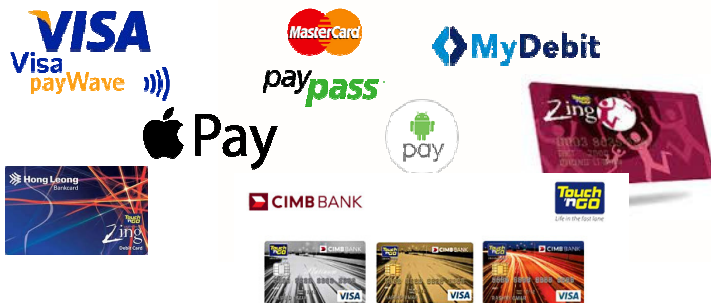
With a well designed scheme using account-based post billing which support complex and equitable fare calculation

#### Sharing One Account

Within family members, organisation or corporate

#### Future Proofing

Cater for future requirement e.g. mobile payment via Bluetooth Low Energy (BLE)





## Open-loop & Account Based Payment System



Similarly, ICPS to implement Open-loop / Account Based platform

## Public Transport Platforms



KTM



MRT



LRT/Monorail



MRT Feeder bus



Rapid Bus

Myrapid



KTM

TnG



Token  
(RapidKL)

- Closed loop system - multiple payments for single journey across many platforms
- Usage is limited to available funds (Myrapid, TnG)
- Anonymous card with limited value added offerings (e.g no online services)



Single Common Card/Pass



Contactless EMV /  
MyDebit



Mobile  
payment



Single  
common  
Token

- Integrated, Open-loop ticketing system - one payment for single journey across multiple platforms
- Payment using EMV / MyDebit cards
- Customers to enjoy more value added benefits such as promotions, discounts via account based payment (ICPS card)
- Account based - variety of different payment models - direct billing, link account with family members or link account for corporate

Closed-loop Payment System

Open-loop Payment System



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# ICPS Project



*The ICPS Project is a national project with an objective to create a unified ticketing environment across Transit Operators in the Klang Valley.*

## ICPS Overall Components



Transit Authentication  
Machine (TAM)  
System



Stored Value Card  
Issuer System

### Transit Acquire System (TAS)

Transit Operator Environment



Fare media  
readers



Ticket vending  
machines



Customer Service



Gate

Fare Media



ICPS Card



ICPS tokens



Debit cards

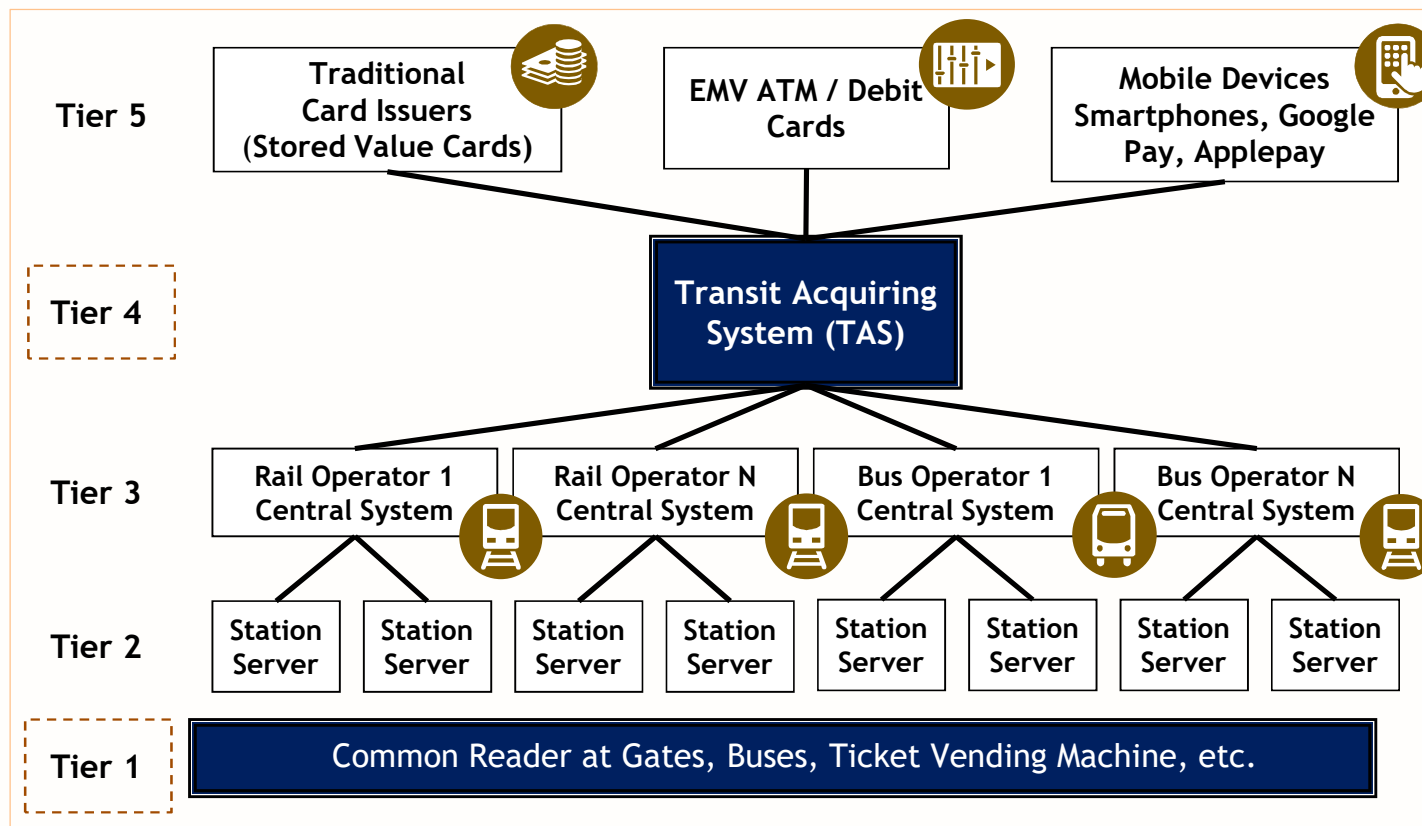


TnG cards



## One common ticket

### Existing ticketing systems to be integrated via a central system





## Key Benefits



Allows seamless and integrated travel experience for commuters

### Outcome



#### Cost saving

- No transfer fee for integrated journeys
- Products with special discounts for targeted groups



#### Enable seamless integrated travel

- Barrier-free travel between different rail lines
- Reduced queuing at stations and less station congestion



#### More payment choice

- Token, Stored Value Card, EMV card, Mobile payment
- Link account (corporate or family)

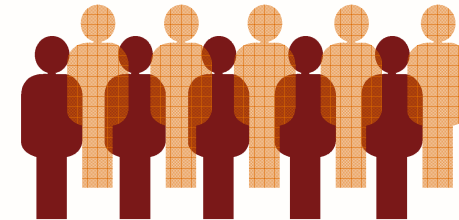


#### Analytics

- Purchasing trends
- Predictive analysis



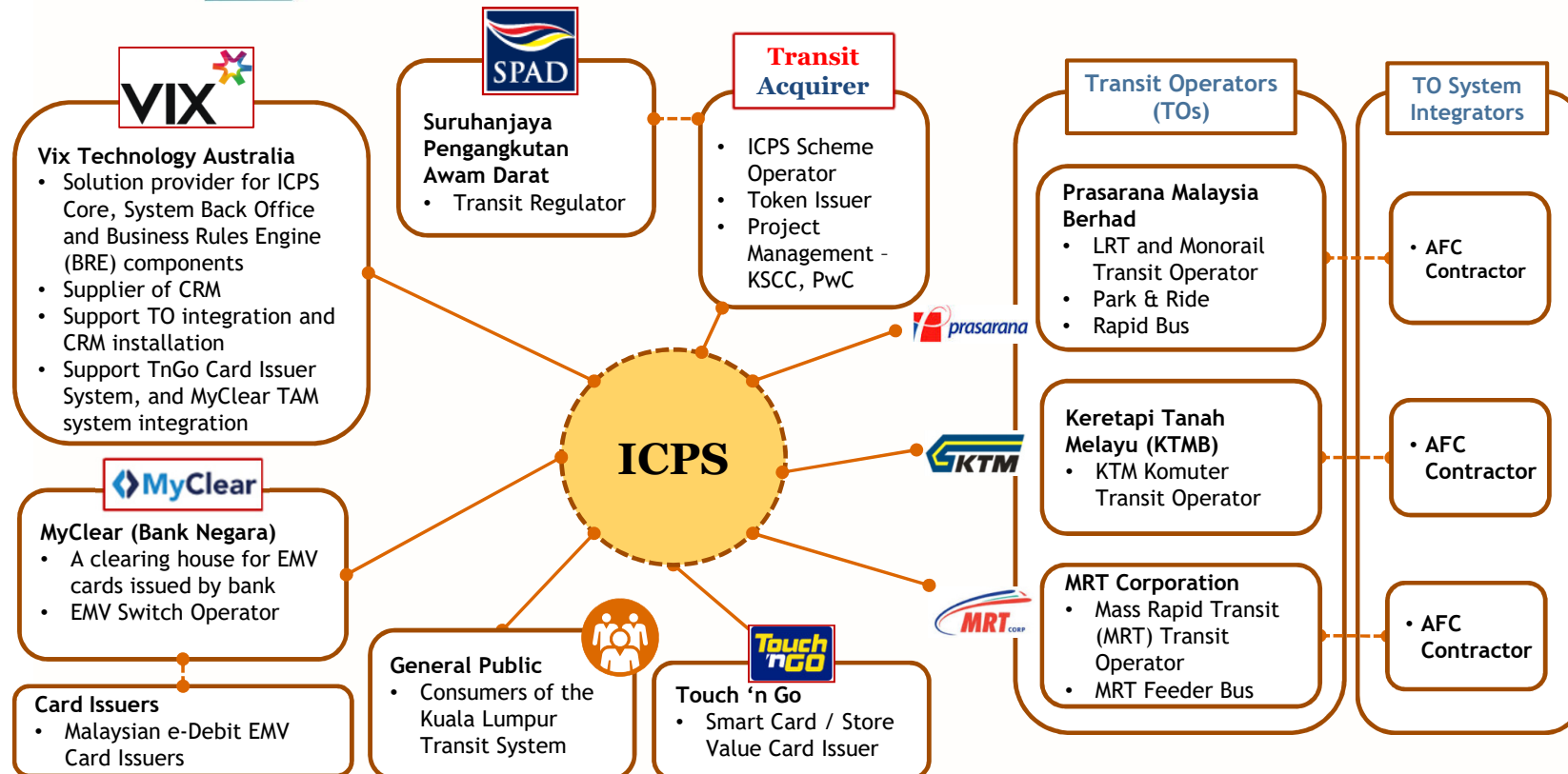
### Impact



**1 million daily passengers** expected to be using the integrated rail and bus under the ICPS scheme in Year 1 operation



## 16 key stakeholders





## ICPS Scope of Work



### ICPS Core System a.k.a Transit Acquirer System (TAS)

- *Apportion and settlement*
- *Management of transit product and new fare media*
- *Integration to Card Issuer System and MyClear*



### Design and Supply Common Reader Module (CRM)

- *Design and supply of CRM to Transit Operators*



### Design and develop new Fare Media

- *New ICPS card and token (unified)*
- *National standard for future card issuers*



### Integration and Installation to Transit Operator

- *Installation of CRM in Transit Operator environment*
- *Integration between Transit Operators' AFC System & ICPS Core System*



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## Current Scenario



**BADRUL**



Home  
**RAWANG**



Office  
**KELANA JAYA**

### LEGEND RAIL & BRT LINES

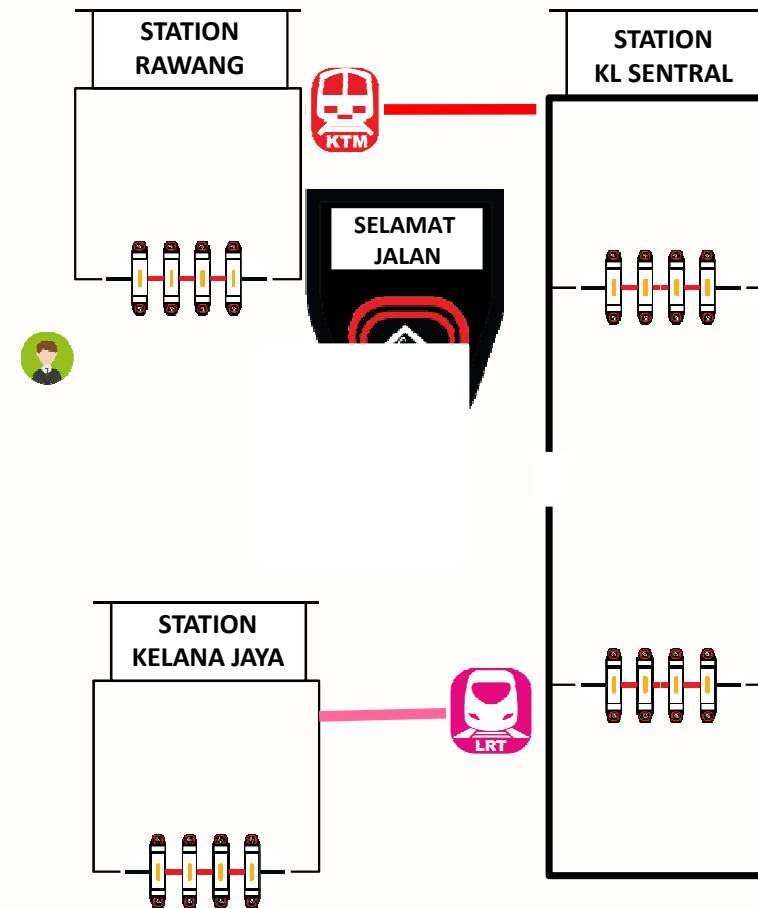
1	KTM SEREMBAN LINE
2	KTM PORT KLANG LINE
3	LRT AMPANG LINE
4	LRT BRI PETALING LINE
5	LRT KELANA JAYA LINE
6	KLIA EKSPRES LINE
7	KLIA TRANSIT LINE
8	KL MONORAIL LINE
9	MRT SUNGAI BULOH KAJANG LINE
10	MRT SUNGAI BULOH PUTRAJAYA LINE
11	LRT RANBARUTAMA KLANG LINE
12	KTM SKYPARK LINE
13	BRT SUNWAY LINE



*This scenario shows a passenger travelling using two different lines (KTM and LRT)*



## Current Scenario





## Current Scenario

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**BADRUL**



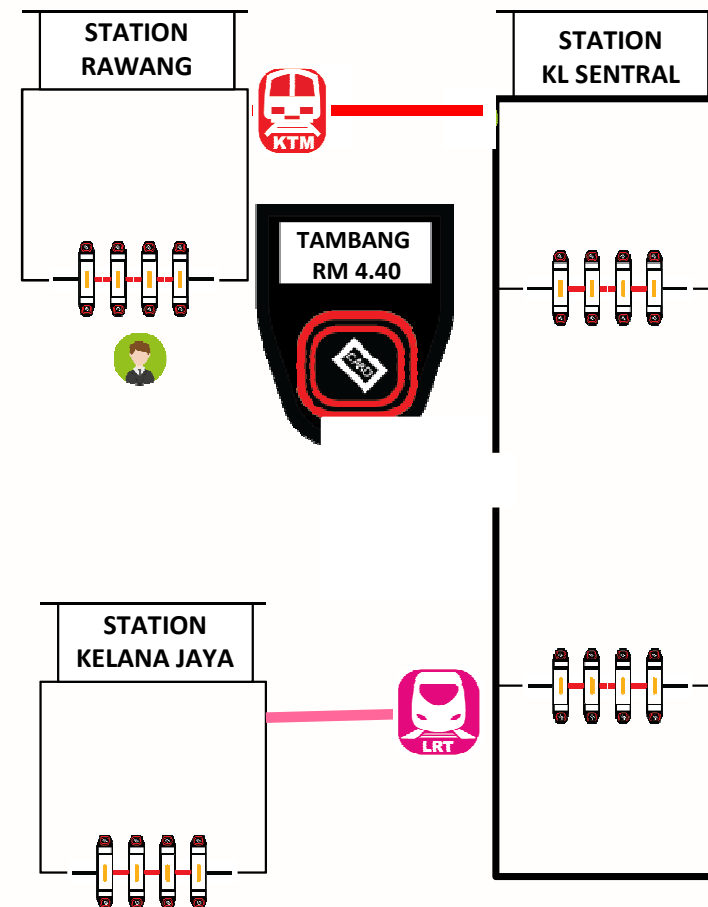
Home

**RAWANG**



Office

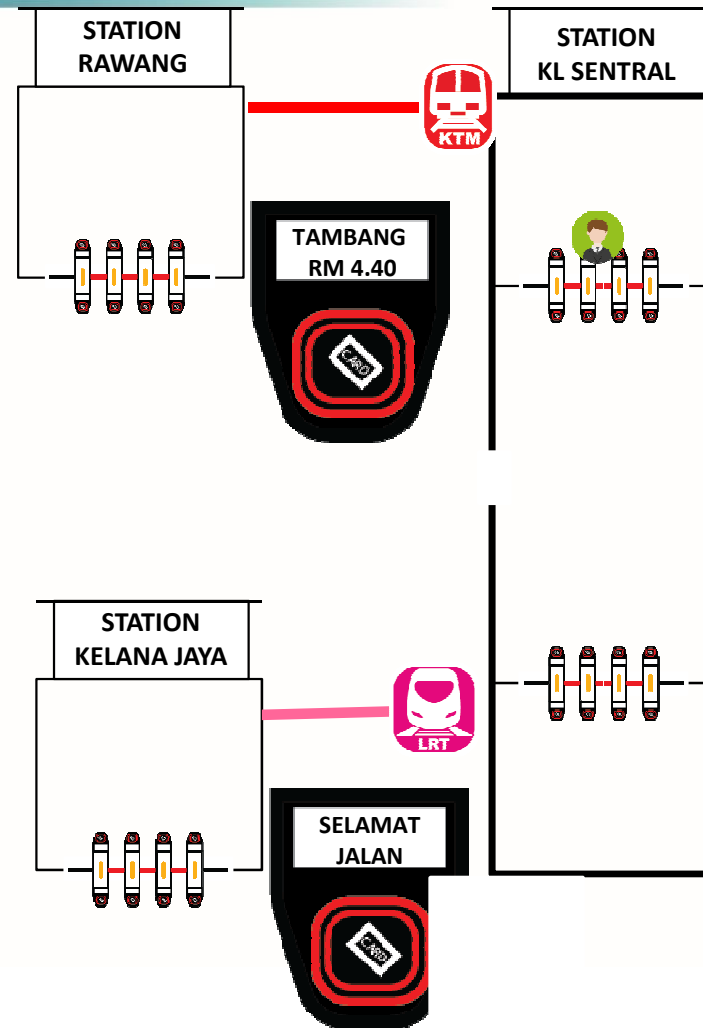
**KELANA JAYA**





## Current Scenario

*The interchange station is KL Sentral*





## Current Scenario

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*The  
interchange  
station is KL  
Sentral*



**BADRUL**



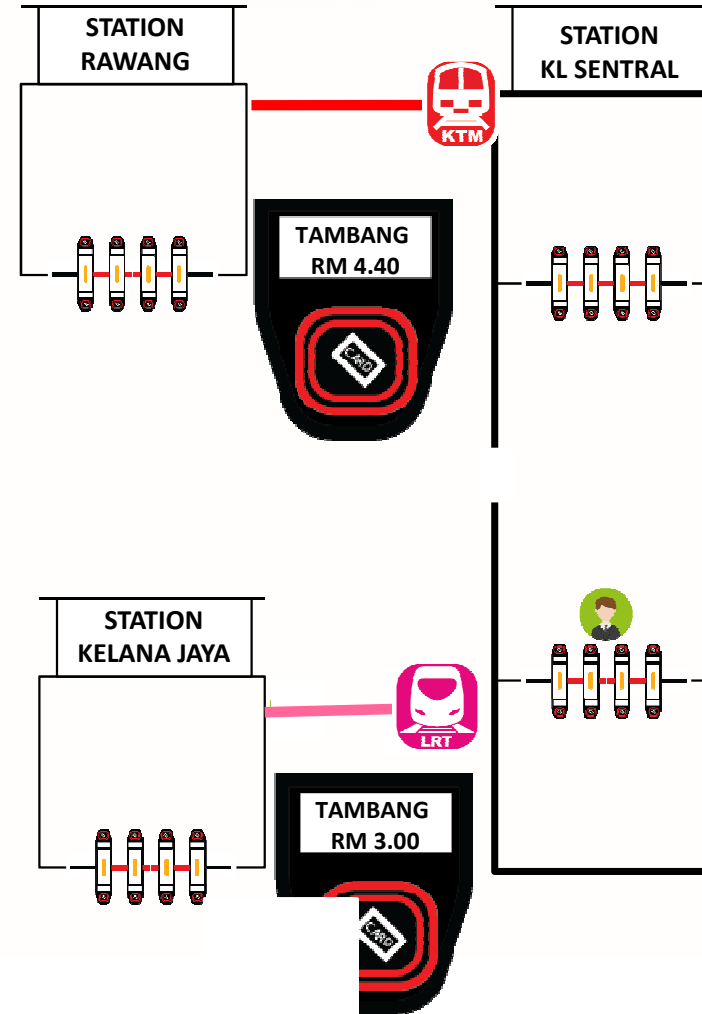
Home

**RAWANG**



Office

**KELANA JAYA**





## Current Scenario



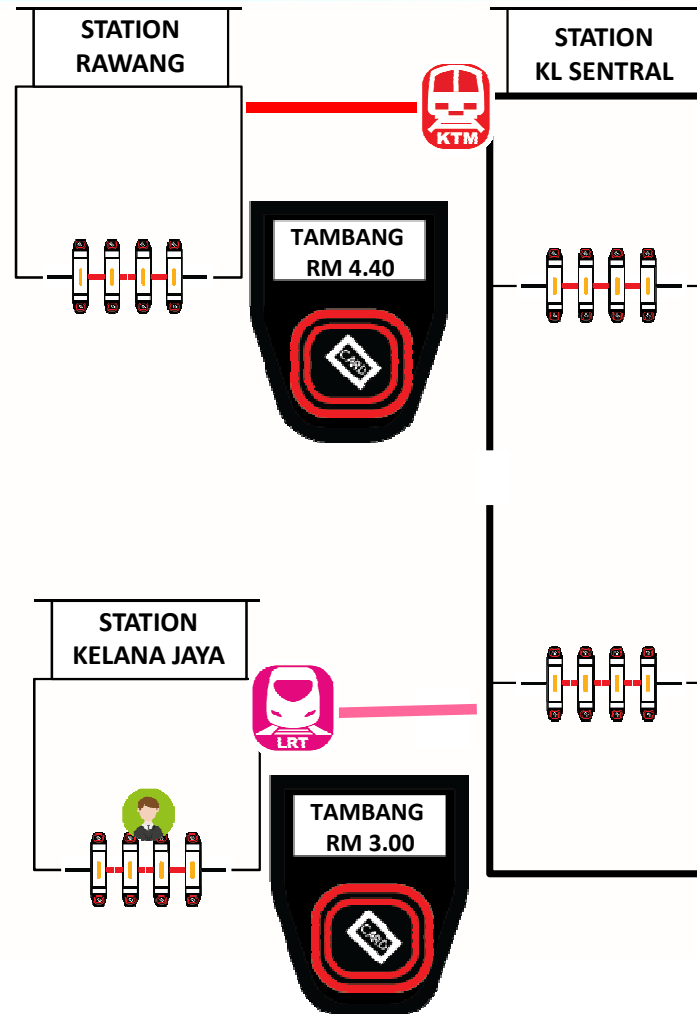
**BADRUL**




Home  
**RAWANG**




Office  
**KELANA JAYA**





**BADRUL**

- Required to check in and check out 2 times using Card / Token.
- To pay the journey **RM 7.40** (RM 4.40 + RM 3.00).



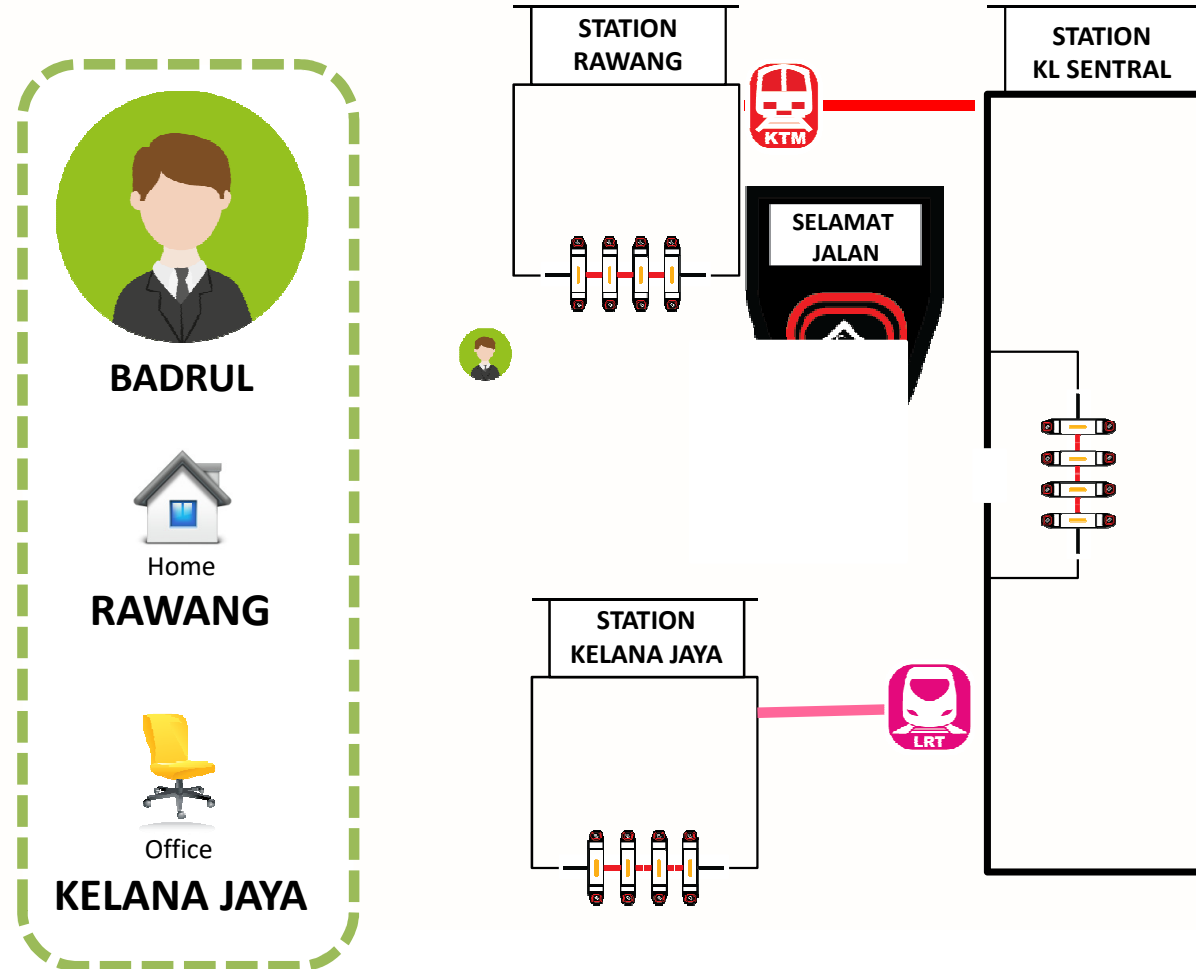
**CASH USER**

- Required to **QUE** up to buy the token 2 times



## After ICPS Implementation

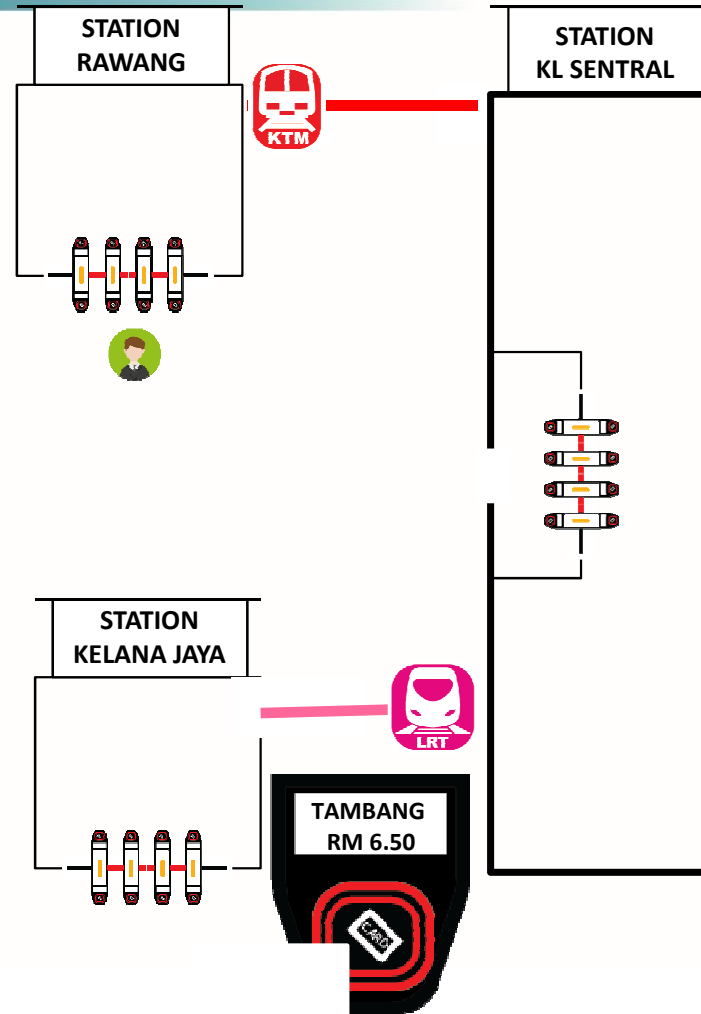
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## After ICPS Implementation

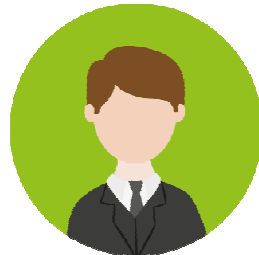
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## After ICPS Implementation

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**BADRUL**



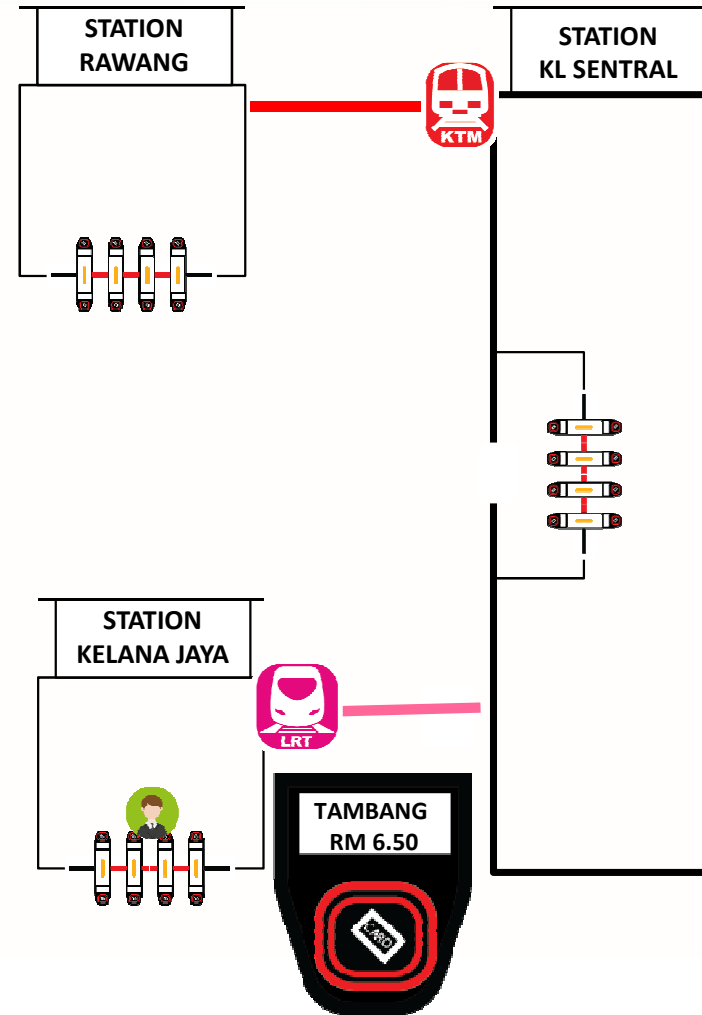
Home

**RAWANG**



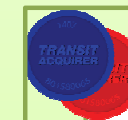
Office

**KELANA JAYA**



**BADRUL**

- To perform a check in and a check out for Card / Token for the whole journey
- To pay the journey **RM 6.50** (Discount RM 0.90).



**CASH USER**

- Need to **QUE** up to buy the token at Rawang Station only.

*Passenger will enjoy more convenience at a cheaper cost!*



# Concession Token



1. Request to purchase a Concession Token at CSO



2. Show your ID Card to CSO Staff; OR



3. ...your OKU Card

4. Concession Token Issued



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# *Thank You*

